Appl. No. 09/939,954
Amendment dated July 1, 2005
Reply to Non-Final Office Action of February 1, 2005

REMARKS/ARGUMENT

Claims 1-18 and 27-43 are pending in the present application. Independent claims 1, 18 and 27 and dependent claims 7, 9-11, 33, 35-37 have been amended herein.

Section 112 Rejection

The Examiner rejected claims 7 and 33 under 35 U.S.C. § 112 as being indefinite for antecedent basis reasons. Applicants have amended claims 7 and 33 to correct the antecedent basis for "the golden ratio of frequency".

Section 102/103 Rejection

The Examiner has rejected claims 1-8 and 27-43 primarily as being anticipated by Matityaho et al, "Neural Network Based Model for Classification of Music Type," (herein referred to as the "Matityaho paper"). Applicants respectfully traverse.

Independent claims 1, 18 and 27 all recite the element of a "multi-stage classifier". The Matityaho paper does not disclose a "multi-stage classifier" as understood in the context of the present invention.

The Matityaho paper presents a frequency representation of audio data which has layered on it a crude model of how the actual ear hears. The Matityaho paper uses a Fast Fourier Transform (FFT) to generate input vectors for a neural network classifier. Since the neural network classifier sometimes produces poor classification results, the Matityaho paper applies simple pre-processing where successive neural network classification results are averaged through integration. Note that the Matityaho paper discloses only one classifier, namely the neural network.

The Matityaho paper, in summary, discloses no more than what was already mentioned in the background section of the present application: namely that using an FFT to analyze the frequency domain of audio data is known and that using a neural network to classify such data is also known. Moreover, the Matityaho paper confirms that using such a simplistic approach is only capable of simple genre classification. In fact, as reported in the Matityaho paper, such a simplistic approach is only able to accomplish binary classification—i.e., is the audio data

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"classical" music or is it a "pop" song? The Matityaho approach is not really good enough to achieve artist classification, as achieved by the present invention.

Applicants, on other hand, introduce the notion of a "learning representation" which is applied to a "multi-stage classifier." As further described in the specification and in the language added to the independent claims, the "multi-stage classifier" includes one or more "first stage classifiers" and a "final stage metalearner classifier". The "first stage classifiers" generate a "metalearner vector" from the "learning representation" which is utilized by the "final stage metalearner classifier" to generate the classification of the audio data. As recited in dependent claims 9-11 and 35-37, the first stage classifiers are preferably support vector machines while the final stage metalearner classifier is preferably a neural network. The Matityaho paper, alone or in combination with the other references cited by the Examiner, does not disclose or suggest this structure.

Conclusion

Applicants respectfully submit that the pending claims represent patentable subject matter and that the application is now in condition for allowance. If the Examiner has any questions, please feel free to contact the undersigned at 609 951-2522. Authorization is hereby given to charge any fees which may be required, except the issue fee, to Deposit Account 14-0627.

Respectfully submitted,

Benjamin S. Lee
Reg. No. 42,787
Tel. No. 609 951-2522

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NEC Laboratories America, Inc.
4 Independence Way
Princeton, NJ 08540
Tel No. 609 951-2522
Fax No. 609 951-2480

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